

CLAIMS:

1. A method of forming electrical connection means on a substrate, comprising the following steps:

- a) depositing an intermediate layer of material (14) on a substrate,
- b) forming an etching mask (16) on the intermediate layer (14), said mask having at least one window (18) having dimensions which are larger than the dimensions envisaged for the connection means to be realized,
- c) etching the intermediate layer of material (14) through the window (18) of the mask in order to form therein at least one aperture (20), having lateral side-walls, for receiving the connection means,
- 10 d) coating the lateral side-walls of the aperture with a spacer (22) in order to narrow the aperture,
- e) depositing at least one conductor material (24) so as to fill the narrowed aperture, and
- f) performing an abrasion operation in order to remove excess conductor material outside the narrowed aperture.

2. A method as claimed in claim 1, in which the step a) utilizes a dielectric material for forming the intermediate layer (14) while a metallic conductor material (24) is used in the step e).

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3. A method as claimed in one of the claims 1 or 2, in which the step d) comprises the deposition of a layer (22) of an insulating coating material, followed by the anisotropic etching of this layer so as to preserve a part thereof on the side-walls of the aperture (20).

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4. A method as claimed in one of the claims 1 to 3, in which the side-walls of the aperture (20) are coated by means of a dielectric material having a low dielectric constant (k).

5. A method as claimed in claim 4, in which the dielectric material of the coating layer (22) is chosen from among fluorous glass, glass deposited by spinning and silicon oxide containing carbon.

5 6. A method as claimed in one of the claims 1 to 5, in which the window of the mask (18) registers with at least one active part (12) of the substrate, and in which said active part (12) of the substrate is exposed during the etching of the intermediate layer of material (14) through the window (18) of the mask.

10 7. A method as claimed in one of the claims 1 to 6, in which apertures (18) are etched which extend right through the intermediate layer (14).

15 8. A method as claimed in one of the claims 1 to 7, in which the mask (16) is formed by means of a photolithography technique, and in which the narrowed apertures (20) have dimensions (d) which are referred to as "ultimate" dimensions which are smaller than those that can be achieved by means of said photolithography technique.

9. A method as claimed in one of the claims 1 to 8, in which the connection means comprise wiring tracks and/or terminals and/or vias between layers.

20 10. An integrated circuit device which comprises connection means (30) which are embedded in apertures (20) of an intermediate layer (14) which is flush with an edge of the apertures, said apertures (20) having side-walls coated with insulating lateral spacers (22), and is realized by means of the method disclosed in one of the claims 1 to 9.

25 11. A device as claimed in claim 10, in which the spacers (22) are made of a dielectric material having a low dielectric constant.

30 12. A device as claimed in one of the claims 10 or 11, in which the connection means comprise wiring tracks and/or contact pads and/or vias between layers and have at least one dimension which is smaller than $0.1 \mu\text{m}$.

13. An electrical or electronic device, wireless or not, comprising at least one integrated circuit device as claimed in one of the claims 10 to 12.